

# PROXIMITY TO INDUSTRIAL PLANTS, NEIGHBOURHOOD SOCIO-ECONOMIC CHARACTERISTICS AND THE RISK OF INFANT MORTALITY – A BAYESIAN ANALYSIS IN LYON, FRANCE

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**Background:**Exposure to environmental nuisances is suspected to explain a part of social health inequalities. Recent literature data suggest that perinatal health might be affected by air pollution and industrial emissions.

**Objective:**To investigate the association between infant mortality and proximity to polluting industries and to explore the role of socio-economic characteristics in this relation.

**Methods:**An ecological study was conducted in Lyon (1,260,348 inhabitants, France). Location of industry plants was drawn from the French database of the European-Pollutants-Emission-Registry. A proximity index was constructed using the buffer method. We used census data to characterize neighborhood socioeconomic status. Mortality information is collected at the French-census block level (n=510). A Bayesian approach was applied to consider spatial dependence and the high mortality rates variability; a Poisson model was accommodated to test the association between infant mortality and proximity to industries.

**Results:**There were 714 infant death cases in Lyon between 2000 and 2009 (average rate of 4.1 per 1000 live births). A significant interaction was found between the proportion of single-parent families and the proximity to industries using a buffer of 500 meters. The risk of infant mortality is significantly greater among census blocks with at least one industry compared to where is no local industry, but only when the proportion of single families in the census block population is “high” (greater than 15,9%): RR=1.32 (p-interaction=0.036). No significant association was shown with the level of unemployment or of education.

**Conclusion:**This observation may result from a greater exposure to industrial pollution due to a higher number of industries in the deprived census blocks. It could also stem from a vulnerability phenomenon whereby residents might be more sensitive to the effect of exposure because of a poorer health status and/or lower access to appropriate care. More refined analyses are underway to identify the most plausible explanations.